



### REMARKS

Claims 20-36 are in this application. Claims 1-19 have been cancelled and replaced claims 20-36. To aid the Examiner in the examination of this application the following is a concordance of the new claims with the claims formerly on file with this application.

| NEW CLAIM | OLD CLAIM                        |
|-----------|----------------------------------|
| 20        | 1                                |
| 21        | 3                                |
| 22        | 2                                |
| 23        | 2                                |
| 24        | 4                                |
| 25        | 5                                |
| 26        | 6                                |
| 27        | 7                                |
| 28        | (within the range of<br>claim 8) |
| 29        | 9                                |
| 30        | 10                               |
| 31        | 11                               |
| 32        | 12                               |
| 33        | 13                               |
| 34        | 14                               |
| 35        | 16                               |
| 36        | 17                               |

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Information Disclosure Statement: For the Examiner's convenience an English abstract of FR2637611 is being submitted herewith. In addition, this reference has been cited as a "Y" reference in the International Search Report

consortia and sodium alginate is dropped in the form of droplets into the calcium chloride solution which form the immobilized biosensing beads.

Claim 22 and 23 correspond to original claim 2 and claim 22 defines how the active aerobic microbial consortia is obtained and claim 23 defines how the active aerobic microbial consortia is immobilized. In view of new claims 22 and 23 it is respectfully requested that the rejections under paragraph 6, 7, 8 and 9 of the Official Action be withdrawn.

In regard to paragraph 10 of the Official Action there is antecedent basis in claim 25 for the synthetic growth media in claim 20. The Examiner states that there is no antecedent basis for "the pH". However since grammatically "a pH" does not make sense. Applicants request that this rejection be withdrawn.

In view of new claim 26, the rejection of paragraph 11 of the Official Action is moot.

In view of new claim 27, the rejection of claim 7 in paragraph 12 is moot.

In view of new claim 29, the rejection of claim 9 is moot.

In view of new claim 30, the rejection of claim 10 is moot.

In view of new claim 31, the rejection of claim 11 is moot.

In view of new claim 32, the rejection of claim 12 is moot.

The Examiner rejected claims 12 -15 as vague and indefinite for the recitation of immobilized biosensing granules. The immobilized biosensing granules are a combination of the polymer and the microbial consortia which forms immobilized biosensing granules.

In view of the new claims 23, it is respectfully requested that the rejection of claims 14 and 15 be withdrawn.

In view of new claim 36, the rejection of claim 17 is moot.

In view of the cancellation of claims 18 and 19, the rejection of claims 18 and 19 is moot.

Applicants preserve all rights to file one or more divisional applications directed to the subject matter of claims 18 and 19.

Therefore, in view of new claims 20-36 it is respectfully requested that the rejection be under 35 USC 112 second paragraph be withdrawn.

The Examiner has rejected claims 1, 5-6, 8, 10-15 and 17-19 under 35 USC 102 (e) as being anticipated by Ramakarishna (U.S. Patent No. 6,420,146). Applicants respectfully traverse this rejection.

Anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. In re Paulson 30 F.3d1475, 31USPQ2d 1671 (Fed. Cir. 1994). Claim 20 defines culturing active aerobic microbial consortia in a synthetic growth media. However, the yeast *Sacchromyces Cereviseae* is grown by fermentation and it does not fall within the definition of an aerobic microbial. Based on the well known differences between organisms which grow by fermentation and those which are aerobic, this reference does not include every limitation in the claim.

As explained on page 1 of the specification, the biosensing granules prepared according to this invention are useful for assessing the biotreatability of effluents. As shown in examples 4-7 of this application the biosensing granules are added to a BOD bottle with effluent and the dissolved oxygen can be measured. The advantage of using the biosensing granules of this invention is

that there is a significant reduction in the time it takes to determine BOD biochemical oxygen demand. For example, according to page 2 of the specification it is stated that according to the prior art it took five days to obtain a BOD analysis, while using the biosensing granules of this invention an analysis was obtained in 2 hours.

The yeast crystals of U.S. Patent '146 are taught to be useful for the advanced production of ethanol and this teaches nothing about preparation of biosensing granules for biodegradability of effluents.

Claim 5 is not anticipated by U.S. Patent '146 because the pH used in claim 5 (now claim 25) is .1N hydrochloric acid or 0.1N of sodium hydroxide. This is not the same as 1N sodium chloride or 1N hydrochloric acid.

Claim 6 (now claim 26) is not anticipated for the reasons that claim 1 is not anticipated.

Claim 8 (now claim 28) is not anticipated for the reasons that claim 1 is not anticipated.

Therefore, it is respectfully that this rejection be withdrawn.

The Examiner has rejected claims 4, 7 and 16 as being obvious in view of U.S. Patent 6,420,146. Applicants respectfully traverse this rejection.

For the reasons stated above U.S. Patent 6,420,146 teaches preparation of a non aerobic microbial or preparation of enhanced production of ethanol. Given the difference between aerobic respiration and fermentation, and the ultimate uses of the products this references does not make claims 4, 7 and 16 obvious.

The Examiner states that selection of specific media, aeration and glucose as activation solution merely represent an optimization of the assay protocol and do

not distinguish the claimed invention. Given the specific combinations of applicant's claims, the differences in the references and the fact that the Examiner has provided no basis for this statement which under the provisions of the second and third paragraphs of MPEP section 2144.03 the Examiner must provide a reference or prepare an affidavit to support that the selection of these features is known to those skilled in the art, it is respectfully requested that this rejection be withdrawn.

The Examiner rejects claims 2-3 as being obvious over U.S. Patent 6,420,146 further in view of U.S. Patent 6,153,416 applicants respectfully traverse this rejection.

As stated above the reference U.S. Patent 6,420,146 is inapplicable and therefore there is no combination with U.S. Patent '416 that makes this invention obvious.

In addition, U.S. Patent '416 teaches away from the instant invention. The focus in U.S. Patent '416 is on a selection of polymers in which the microorganism can be immobilized. U.S. Patent '416 specifically teaches that natural immobilization techniques often provides less than optimal results and are disadvantageous, column 1 lines 17-50. In fact, the entire teaching in U.S. Patent '416 is towards selection of polymer mixture which would enable immobilization. The teaching in U.S. Patent '416 is not towards the natural polymers such as alginates alone for immobilizing the microbial consortia. The instant invention on the other hand clearly demonstrates that the use of natural polymers alone provides good results in the preparation of stable biosensing granules for assessment of biodegradability of wastewater.

U.S. Patent '416 when read in combination with U.S. Patent '146 does not provide any guidance to teach towards the instant invention. It is true that U.S. Patent '416 mentions that apart from enzymes, waste water treatment microorganisms can also be immobilized. However, to arrive at the instant

invention, a skilled reader would have to disbelieve the teaching in U.S. Patent '416 that natural polymer immobilization methods are ineffective or disadvantageous, and that any polymer, whether natural or synthetic can be used, and then apply the protocol of U.S. Patent '146, after determining the specific parameters such as growth media, conditions for aeration, the MLSS values, incubation times and temperatures, etc. There is no combination of these references where one skilled in the art would have a reasonable expectation of success.

Therefore it is respectfully requested that the rejection be withdrawn.

The Examiner has rejected claim 9 as being obvious in view of U.S. Patent 6,420,146 in view of U.S. Patent 6,361,695. Applicants respectfully traverse this rejection.

In view of the arguments presented above about why U.S. Patent 6,420,146 is inapplicable, it is respectfully requested that this rejection be withdrawn. U.S. Patent '695 is irrelevant to the instant invention since it is specifically limited to shipboard waste water treatment systems. The MLSS values described in this patent cannot be extrapolated to any situation of waste water treatment. There is nothing to suggest to someone skilled in the art that an MLSS value used for treating shipboard waste water is applicable to industrial effluent. Therefore, it is respectfully requested that this rejection be withdrawn.

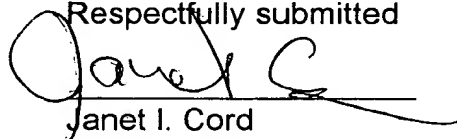
The Examiner has rejected claims 1, 4-8 and 10-19 under the judicially created doctrine of obviousness type double patenting as being unpatentable over the claims of U.S. Patent 6,420,146. Applicants respectfully traverse this rejection. For the reasons stated above the claims 1, 4-8 and 10-10 are not obvious over the claims of U.S. Patent 6,420,146. Therefore it is respectfully requested that the rejection be withdrawn.

obviousness type double patenting over Yuan U.S. Patent 6,153,416, and claim 9 under claims 1-16 of U.S. Patent 6,420,146 in view of Hussain 6,361,695 applicants respectfully traverse this rejection and state that these rejections must be withdrawn as there is no basis for law or procedure for making such a rejection. As stated in MPEP 804 "before consideration can be given to the issue of double patenting there must be some common relationship, inventorship and/or ownership of two or more patents or applications". As stated in part (a) of MPEP 804 double patenting may exist between issued patent and an application filed by the same inventive entity or by an inventive entity having a common inventor with a patent and/or by the owner of the patent. "There is no relationship between the inventive entity or owner of this application, and patents 6,361,695 and 6,153,416.

Therefore it is respectfully requested that this rejection be withdrawn.

Applicants submit that the present application is in condition for allowance and favorable consideration is respectfully requested.

Respectfully submitted

A handwritten signature in black ink, appearing to read "Janet I. Cord", is written over a horizontal line.

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**Process for fixing microorganisms onto polymer particles and purification process using the particles thus colonised**

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Inventor(s):

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EC Classification: C02F3/10D, C12N11/08


Equivalents:

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**Abstract**

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Process for fixing microorganisms onto polymer particles, characterised in that it consists: firstly, in causing superabsorbent polymers to swell in a nutritive solution containing the said microorganisms; then, after swelling, in removing any excess water; and finally, in collecting the colonised swollen gel particles thus formed and, optionally, in drying them. Application: purification of waste effluents, especially of the food

industry. 

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